AUGUST PETERMANN: A REVIEW*

The book is a study of the life work of the famous Gotha geographer and agitator, viewed in relation to the geographical situation of his time. After a brief sketch of Petermann's life the author gives an appreciation of his many-sided activity as a practical geographer, an originator of geographical theories, and a cartographer, and determines his place in the history of German geography.

The "leading motive" in the life and work of this extraordinary man was the passion for the scientific exploration of the earth, the desire to fill up the gaps in our knowledge of the foreign parts of the world regardless of political or material advantages. To obtain this end he picked out the men most fit to do the work, secured the funds necessary to carry it on, and mapped out the lines along which it would bring the best results; as soon as their reports began to come in he worked them up in order to ascertain, map, and publish their results as quickly and widely as possible by means of his *Mitteilungen.* The latter became, in this way, the leading and central organ of the time for all matters pertaining to the progress of exploration regardless of the nationalities of the explorers. Likewise the Perthes Institution developed into the great clearing house for reports of travels and discoveries, rivalling even the corresponding geographical centers of England.

There was at that time no man in Europe who knew better than Petermann the problems that were still awaiting their solution in the unknown parts of the globe, nor which of these problems must be attacked next, nor who would be the best man for the one which happened to be under consideration. After the great success that he had in the case of Barth, hardly any expedition was organized without his advice. African and Arctic explorations especially received a new impetus through his efforts, most decidedly in Germany, where the geographical interest had long been dormant owing to her deplorable political condition. He was indeed the father of modern German geographical exploration, and he even attempted to put it on a permanent basis by founding a great national German geographical society, after the pattern of the Royal Geographical Society; but this was one of the few enterprises in which he did not succeed.

Aside from this practical work as an organizer and promoter of geographical discovery, he must also be classed among the principal theoretical geographers of Germany. Just as Cuvier, from the few remnants of his marsupial, determined what the whole animal when discovered would look like, thus Petermann divined, from the scant reports of early Australian travelers, the character and climate of the interior of Australia and lived to see his theories justified by later explorers. In a similar way he anticipated much of the geography of central Asia and Africa so that his theories could

* August Petermann. Ein Beitrag zur Geschichte der geographischen Entdeckungen und der Kartographie im 19. Jahrhundert. Anhang I: Petermanns Schule. Anhang II: Bibliographie. Von Dr. phil. E. Weller. x and 284 pp. Vol. IV of "Quellen und Forschungen zur Erd- und Kulturkunde" edited by Dr. R. Stübe. Otto Wiegand, Leipzig, 1911.

serve as a basis for laying out the work f the discoverers in those regions. His pet theories, however, concerned the Polar seas and the Gulf Stream. Keeping at a sane distance from both the Palæocrystic and the Open Polar Sea hypotheses, he arrived, through the comparative study of the physical and meteorological conditions as reported by previous explorers, at the conclusion that only a partly open sea was possible under those high latitudes, and that the American and the Asiatic part of that sea must be very different with regard to the temperatures of their waters, the occurrence of ice, etc. He insisted upon the fact that the character of those regions could not be determined by latitude alone, and that they must be largely modified by the shape and distribution of the land, ocean currents, and similar factors of a purely physical nature, and his propaganda for polar expeditions was not influenced by the search for any north-west passage, but only by the desire to obtain reliable observations for the study of these general physical conditions of the Arctic which must, in their turn, deeply influence the climate of the more southerly latitudes. He therefore pleaded for establishing a number of permanent observation stations all over the Arctic zone, which have now become to some extent an established factor in Polar studies.

Very closely connected with his polar theories and, in fact, at the bottom of much that he said concerning them, was his theory of ocean currents, especially of the Gulf Stream. Although overestimating its influence, he justly recognized it as the cause of the milder climate of Northwestern Europe and the adjoining seas, and to him must be given the credit of having been the first who studied that current not as a local, but as a telluric phenomenon. This must be especially emphasized, because, owing to the fact that his utterances on the subject have never been published as a whole but were widely scattered through many contributions to the *Mitteilungen* and other magazines, he has never received the appreciation for it which he deserved.

Much better known is his work as a cartographer. His Altas of New Zealand, his nine-sheet map of Australia, his six-sheet map of the United States, were epoch-making in the cartography of those countries, and it was he, too, that made Stieler's Hand Atlas what it is to-day. The superiority of Petermann's maps over other maps of his time was a direct effect of his zeal for scientific exploration. It was only on the map, he believed, that the results of the latter could be clearly expressed. "That which, in a written report, may be circumscribed or considered doubtful, must take a *definite* shape on the map," was his fundamental conviction, and he endeavored, therefore, to give on his maps as accurate as possible a picture of the actual conditions on the surface of the earth. His abilities, fortunately, were adequate to his ambitions. With the latest knowledge about all parts of the world which established the scientific accuracy of his work, he combined the technical skill and refined taste of the master cartographer. These qualities made him the originator of a new style in German cartography the standards of which became the gauge of merit for maps all over Germany, so that the excellence of modern German maps may be directly traced to Petermann's influence.

His limitations are seen in the overestimation of the map: to him, map-making was practically scientific geography itself, and a topographical map which would reproduce exactly every spot of the earth as it is in nature would have meant to him the most valuable result of geographical effort. Such opinions indicate the reaction which had set in against the cosmic specu-

lations of Humboldt and the anthropogeographical theories of Ritter. It is because in either of these fields an enormous amount of positive knowledge of single facts is needed in order to generalize with any claim to accuracy, and that this very basis of the science appeared to him, at the time, rather indefinite and incomplete, that he wanted first of all to make sure of the facts themselves. Thus he holds, in the middle of the nineteenth century, a place entirely by himself, embodying the transition from the old speculative to the new empirical method in geography.

In the first appendix the author tells the story of Petermann's school and his most noteworthy disciples: Ravenstein, Hassenstein, Debes, Friederichsen, Habenicht, and others; the second illustrates the enormous working power of this unique personage, containing a list of his publications no less than 44 pages in length.

As a book of reference on a very interesting and little known phase of geographical life in Germany, the book is a very meritorious addition to the history of modern geography. MARTHA KRUG GENTHE.

NOTES ON THE DESCRIPTION OF LAND FORMS.—VII.

GEOGRAPHICAL DESCRIPTIONS AS REFLECTIONS OF PREPARATORY EQUIPMENT. An observer ordinarily sees most distinctly and describes most definitely the kinds of things that he already knows most familiarly. This principle has two important corollaries:—first, that the intending observer will do well, before setting out on his travels, to extend his preparatory equipment as far as possible, so as to become familiar with many kinds of things and thus be ready to recognize them at sight; second, that he will do well, when his travels are under way, to give particular attention to the things that do not readily find mental counterparts in his preparatory equipment, for these things may be novelties of special value.

It is instructive, when one reads the description of a distant region, to bear this principle and its corollaries in mind, with a view of discovering the schemes of treatment in which the observer had been previously instructed, and of determining the sufficiency of these schemes for the presentation of the facts that lay before him.

THE ARGENTINE CORDILLERA. F. Kühn. Beitrage zur Kenntnis der Argentinischen Cordillere zwischen 24° und 26° südl. Br. (*Zeitschr.* Gesellsch. für Erdk. Berlin, 1911, 147-172). The difficult journey over the desert highland basins of the Andean Cordillera between Salta in northwest Argentina and Taltal on the Chilean coast offers rich opportunity for the observation and description of a great variety of landscapes, many of which are clearly set forth, for the most part in explanatory terms, in the article above cited. Particularly interesting is Kühn's clear exposition of the striking contrast between the deeply